ENGLISH TRANSLATION OF THE INTERNATIONAL APPLICATION

FOR NATIONAL PHASE SUBMISSION

Claims

1. A piezo actuator (15), in particular a piezo actuator for actuating an injector for an injection system of an internal combustion engine, having

a holder (5-10) for spatially fixing a piezo stack (2) and two associated connection pins (11, 12) for electrical contacting of the piezo stack (2),

c h a r a c t e r i z e d b y

being implemented as an individual mount for accommodating and holding only a single piezo stack (2) with two associated connection pins (11, 12).

2. The piezo actuator (15) as claimed in claim 1,
c h a r a c t e r i z e d i n t h a t
the holder (5-10) has an edge guard (7, 8) for protecting an axially running edge of the piezo stack (2).

3. The piezo actuator (15) as claimed in claim 2,
c h a r a c t e r i z e d i n t h a t
the edge protection has at least one axially running rib (7, 8) which covers an axially running edge of the piezo stack (2).

4. The piezo actuator (15) as claimed in claim 2 or 3,
c h a r a c t e r i z e d i n t h a t
the edge protection (7, 8) covers two axially running, opposite edges of the piezo stack (2).

5. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
between the edge guard (7, 8) and the piezo stack (2) there is a gap large enough to allow a potting compound to penetrate during encapsulation.

6. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the axially running edges of the piezo stack (2) form an at least six-sided polygon with the connection pins (11, 12) and the edge guard (7, 8) in cross-section in order to facilitate wire winding.

7. The piezo actuator (15) as claimed in claim 6,
c h a r a c t e r i z e d i n t h a t
the polygon is essentially equilateral in order to allow wire winding with approximately constant wire tension.

8. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the connection pins (11, 12) are fixed in the holder in a form-fit and/or force-fit manner.

9. The piezo actuator (15) as claimed in claim 8,
c h a r a c t e r i z e d i n t h a t
the connection pins (11, 12) are extrusion-coated or molded in with the material of the holder (5-10).

10. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the holder (5-10) essentially consists of plastic.

11. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the two connection pins (11, 12) are fixed in the holder (5-10) in two radial bearings in each case.

12. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the two connection pins (11, 12) are axially fixed in the holder (5-10) in a thrust bearing in each case.

13. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the holder (5-10) has a first end plate (5) with a cutout (9) for guiding the piezo stack (2) at one end and a second end plate (6) with a cutout (10) for guiding the piezo stack (2) at its other end, the two end plates (5, 6) being interconnected by ribs (7, 8).

14. The piezo actuator (15) as claimed in claim 13,
c h a r a c t e r i z e d i n t h a t
the cutout (9) in the first end plate (5) and/or the cutout (10) in the second end plate (6) is larger than the cross-

sectional area of the piezo stack (2) in order to allow the penetration of potting compound.

15. The piezo actuator (15) as claimed in one of the preceding claims,
c h a r a c t e r i z e d i n t h a t
the holder (5-10) with the inserted piezo stack (2) and the inserted connection pins (11, 12) is encapsulated with a potting compound.

16. A production method for a piezo actuator (15) comprising the following steps:
- Inserting a piezo stack (2) and two connection pins (11, 12) in an assembly mount (1),
- Establishing an electrical connection between the two connection pins (11, 12) and the piezo stack (2) while the piezo stack (2) and the connection pins (11, 12) are inserted in the assembly mount (1),

c h a r a c t e r i z e d i n t h a t
the assembly mount (1) only accommodates a single piezo stack (2) and the two associated connection pins (11, 12).

17. The production method as claimed in claim 16,
c h a r a c t e r i z e d b y
the following step:
- Encapsulating the assembly mount (1) with the inserted piezo stack (2) and the inserted connection pins (11, 12) with a cure-hardening potting compound.

18 The production method as claimed in claim 17,
c h a r a c t e r i z e d b y

the following steps:

- Inserting the assembly mount (1) with the inserted piezo stack (2) and the inserted connection pins (11, 12) in a mold and then
- Encapsulating the assembly mount (1) with the potting compound in the mold.

19 The production method as claimed in one of the claims 16 to 18,
c h a r a c t e r i z e d b y
the following steps:

- Winding the assembly mount (1) with the inserted piezo stack (2) and the inserted connection pins (11, 12) with at least one electrically conductive wire (14),
- Electrically connecting sections of the wire (14) to one of the two connection pins (11, 12) and one of two terminals (4) of the piezo stack (2),
- Cutting the wire (14) between the contacted wire sections and removing the cut wire sections.

20 The production method as claimed in one of the claims 16 to 19,
c h a r a c t e r i z e d i n t h a t
the assembly mount (1) has at least one edge guard (7, 8) in order to protect an axially running edge of the piezo stack (2).

21 The production method as claimed in one of the claims 15 to 20,
c h a r a c t e r i z e d i n t h a t
the potting compound is silicone.